Neurological Correspondence.

NEW YORK, JUNE 20, 1877.

MESSRS. EDITORS: I take pleasure in forwarding some of the papers read before the various New York medical societies, together with a *resumé* of debates and abstracts of papers, when the entire document could not be procured.

This, I believe, embraces about all that has occurred bearing upon neurology, excepting a course of six lectures recently delivered in this city by Eugene Dupuy, M. D., on epilepsy, contractions and paralysis. These lectures are now undergoing thorough revision by their author, and will appear in a small volume, probably in the course of the summer.

Another important event in neurology was the meeting of the American Neurological Association in this city, on the 6th June; but as you already have a full account of the proceedings of that society, I have not referred to it in the following pages.

THE MEDICO-LEGAL SOCIETY.

JACOB I. MILLER, Esq., of the New York Bar, at a meeting of the Medico-Legal Society, read a paper on "Experts as Witnesses." The paper called out a very full discussion, and as this is a subject which interests what may be styled the higher plane of the profession, we will take the liberty of presenting pretty full extracts of both essay and debate:

It is the object of evidence, says Dr. Miller, to establish facts for judicial determination. Such evidence consists of written documents or deposition of living witnesses. These are of two kinds; ordinary witnesses, who depose to facts, and experts, or skilled witnesses, who depose to matters of science. The former tell what they know; the latter tell what they think—what they believe. The first state facts; the latter tell what the facts mean.

Experts were known to the Roman law, and during all the history of the common law. Indeed, notwithstanding the unsatisfactory nature of much of the expert testimony produced in our courts, it is difficult to see how the use of this class of testimony can be avoided. Courts and juries are not presumed to be skilled in all the scientific questions which are involved in the cases which they are called upon to try. They cannot understand the evidence produced. They need an interpreter. The rule in such cases is well stated in Cooper *vs.* The State, 23 Texas Rep. 336. The court said: "It is a familiar general rule of evidence that witnesses must speak as to fact, and cannot be permitted to give their opinions. It must be left to juries to draw inference from the facts. But to the general rule here stated, there are exceptions. In certain cases, certain persons may give their opinions to the jury. I cannot better state the principle on which the exceptions to the general rule repose, than by quoting the language of the judge who delivered the opinion of the court in the Jefferson Insurance Company *vs.* Corteal, reported in 7 Wend. 73. In that case, Judge Sutherland said: 'On questions of science, or skill, or trade, persons of skill in those particular departments are allowed to give their opinions in evidence; but the rule is confined to cases in which, from the very nature of the subject, facts disconnected from such opinions cannot be so presented to a jury as to enable them to pass upon the question with the requisite knowledge and judgment. Thus, a physician, in many cases, cannot so explain to a jury the cause of the death or other serious injury of an individual as to make the jury distinctly perceive the connection between the cause and the effect. He may, therefore, express an opinion that the wound given or poison administered produced the death of the deceased, but in such case the physician must state the facts on which his opinion is founded.' "

Physicians may appear in two capacities; when they depose to facts they differ in no respect from ordinary witnesses. Their testimony is then confined to their knowledge of the facts of the case. They may also be called as experts; and it is in this capacity that this society was interested. In both cases they are obliged to respond to a subpœna, but in the former only are they *compelled* to testify. Either party to a litigation is entitled by law to the testimony of any person who can enlighten the court and jury upon the facts of the case; but a physician's opinions, his knowledge of his profession, his skill, are his own, to be kept or imparted at his pleasure. While, therefore, he might be compelled to come to court, and would be punished for contempt of court if he refused, he could not be compelled to give his opinions, to act as an expert, except, perhaps, in the case of the government, which has a right to command the services of any individual owing allegiance to it. His knowledge is his own, and he parts with it upon his own terms.

The position of the medical expert, therefore, is one of dignity. His appearance is voluntary. He speaks to science. He produces the connecting link between cause and effect; between the act of the accused and the allegations made against him. As the jury are usually ignorant of the matters about which he speaks, the physician should be a person of the highest skill and of the strictest integrity.

Properly speaking, an expert is not a witness for either side. He does not depose to the facts which form the basis of the judgment. He is not concerned with the result. He is not to answer the question is he guilty or not guilty?—is he sane or insane? These are for the jury. He is to say whether, assuming certain facts to be shown, they, as a matter of science, would indicate what is necessary to meet the allegations against the accused. If the jury does not agree with the expert, there is no conflict. No reflection is cast upon him. But he does not always remember this; *he sometimes acts as if he were a retained witness, a testifying advocate.*

Expert testimony should be correct. Otherwise disaster befalls not only the parties to the cause, but the whole medical profession. In so marked a degree has this appeared in some cases that judges have not hesitated to tell the jury that the expert testimony was wholly unreliable, and that they need not be guided by it. It would not be difficult to raise a doubt about the sanity of any man in New York. Our safeguard is the right of the opposing counsel to inquire into the qualifications of the person offering himself as an expert. This is not a full protection, for the court itself does not know or is not presumed to be skilled in any science, except that of the law. He is, to a large extent, dependent upon the witness himself respecting his qualifications. If the court does his duty, he will not allow a physician to testify as an expert, unless he is especially qualified by experience to speak upon the subject of science under consideration. Because a man is a physician, he will not be allowed to testify to everything which comes within the scope of medicine.

After citing the opinions of many learned judges in various cases, the writer draws the conclusion as to the qualifications of an expert, and says that he who would testify as an expert should be peculiarly fitted for the work of giving opinions on the subjects and have more than ordinary knowledge on the subject. No precise limits as to knowledge can be set; for as science is constantly progressing, the extraordinary knowledge of to-day becomes the ordinary knowledge of to-morrow. A few advance spirits make discoveries which soon become the common property of the world. The standard of the expert must change with the progress of his science. But as all sciences have progressed to such great heights, it is obvious that any one who would extend his knowledge beyond these limits, must be content with a narrower range. And, hence, the sphere of the expert in any one science is proportionally narrowed. The tendency is to specializing. No one physician expects to master all branches of his profession ; and hence, no one physician can expect to act as an expert in every class of cases which come under the cognizance of members of his profession.

While the court can inquire somewhat into the extent of the knowledge and experience of the witness, offering himself as an expert, it cannot discriminate between the various schools of medicine.

The reason is obvious; the court is not presumed to know anything about medicine or surgery. Therefore, when a medical witness offers himself and declares his ability to testify and shows that he has had the requisite experience, the court cannot reject him. He must be allowed to give his opinions. His knowledge can be tested in a cross-examination; and in all cases he must state the facts upon which his opinions are based.

Professional books are not competent evidences. They are treatises upon certain subjects stating general principles, but having no relation to the particular case under consideration. The jury want an explanation of that case; professional books cannot give it. A witness, however, may refer to such books as containing the generally accepted opinions of the profession, and as sustaining him, (generally,) but cannot read them as part of his evidence. The author not being present, or under oath, cannot be cross-examined and his knowledge tested.

Medical experts cannot be asked questions, as experts, which can be answered equally as well by other persons. If the jury can know the questions as well as he, the expert is not needed. Hence, whatever lies within men's general knowledge, is not a subject for an expert. See Woodin vs. The People; also, Van Zant vs. The Mutual Life Ins. Co., Kennedy, 39 N. Y., 255.

A witness may not be asked whether the accused was sane or insane at the time when he is alleged to have committed a crime, if there is a conflict as to the fact. He may not be asked whether a testator had capacity to make a will; a but hypothetical case may be put to him, and his opinion asked thereon. The jury will see how far then it corresponds with the case in hand, and, therefore, how far their judgment shall be guided by it. Wendell vs. the Mayor of Troy, 39 Barb., 338; People vs. Lake, N. Y., 358; Goodrich vs. The People, 3 Park. 622; White vs. Bailey, 10 Mich., 159; Shelton vs. The State, 34 Texas, 666; Woodbury vs. Obear, 7 Gray, 469.

If, however, the physician has attended the accused, and had frequent opportunities to witness his conduct and converse with him, then he can give an opinion as to his sanity or insanity, based upon such observation. And after an opinion has been given, a cross-examination will be allowed upon hypothetical questions predicable of the facts then proved in the case, in order to test the correctness of the opinions of the witnesses. People vs. State, 12 N. Y., 358:

In order to be an expert in the true sense of the word, the witness must have had experience in the particular science under investigation. Mere opportunities for observation are not sufficient. He may not have improved the opportunity. He may have considered the profits which should arise from dealing in certain articles, rather than their scientific value. Page vs. Parlor, N. H. Rep., 59. The court, after stating in what cases witnesses are allowed to give their opinions, adds:

"It must, however, be first shown that they are skilled or scientific men, or at least that they have superior *actual* skill or scientific knowledge in relation to the question, before their opinions can be competent. Mere *opportunity for observation is not sufficient.*"

We have thus seen what are the qualifications of medical witnesses, and what is the sphere of their duties. It would almost seem as if their testimony should produce more satisfactory results. And yet, within the last ten years, trials have taken place in this and neighboring States, in which the medical witnesses did more harm than good, and more to mislead the jury than to instruct them. Why is this so? Incidentally two causes have been mentioned: (1), incapacity; (2), partiality of witnesses. Some knew no better; some did not wish to know better. But there are cases wherein skillful and well-meaning men fail to meet the demands of the case. It is not because they do not understand the general subject under consideration; not because they are unwilling to do their duty, but because they fail to comprehend the demands of the case, and to apply correctly the knowledge which they possess. This most frequently happens in cases of insanity. This is the question for the jury to decide. But the jury are not presumed to know enough about insanity to judge correctly in reference to it. They do not understand the evidence. They do not comprehend its scientific bearing. The aid of the medical witness is invoked. He is expected to tell them what? What his notion of sanity is? Oh, no! He may be one of those people who think that everybody is more or less insane; that there are no perfectly sound bodies—but all contain within them the seeds of disease and death. So there are no sound minds. Or, he may think that the legal test is not a sound one, and wishes to adopt one more scientifically correct, as he thinks. No! He is expected to use the word insane as the law uses it, and in the same sense. That is "solely whether he was capable of having and did have a criminal intent. If he had it punishes him; if not, it holds him dispunishable, and it applies a test by which the jury is to ascertain whether the accused be so far insane as to be irresponsible. That test is the capacity to distinguish between right, and wrong as to the particular act with which the accused is charged. If he understood the nature of the act, if he knows his act is criminal, and that if he does it he will do wrong, and deserve punishment, then in the judgment of the law he has a criminal intent, and is not so far insane as to be exempt from responsibility. On the other hand, if he is under such delusion as not to understand the nature of his act, or if he has not sufficient memory and reason and judgment to know that he is doing wrong, or not sufficient conscience to discern that his act is criminal and deserving punishment, then he is not responsible. U. S. *vs.* McCue, 1 Curtis, Reps. 1.

If the witness does not use the word in that sense, he misleads the jury, and causes them to err. Just here has been the mistake which medical witnesses have so frequently made; and after the prisoner has been acquitted, have been astonished at their own acts. And then they talk of the "criminal insane" and the "insane criminal!" If the medical witnesses would appreciate exactly the question which they were called upon to answer, and answer it honestly and conscientiously, much of the confusion which hangs about this subject would be removed. They would not startle at their own conclusions, or aid in securing results which shock the common sense. Let them, before they testify, inquire what the law demands of them, and strive to meet the law's requirements, and not palm off on the court and jury what Maudsley thinks or Ray thinks; or perhaps what the witness thinks insanity ought to be. But we have often heard it said here by some physicians, that in their judgment the legal test of insanity is not scientifically correct, and they cannot adopt it—that they have a better test of their own. If they are unwilling to do what the law requires, they have an alternative; they need not testify at all. They will not be compelled to give their opinions. The court does not want their peculiar notions. If the test is not correct apply to the legislature to have it changed. But adopting another test is not changing—it is defeating the law.

From what has been said, it would appear that the office of medical expert is one of dignity and importance, for it relates to questions of medical science and skill. If expert testimony is not to become a synonym for useless testimony, more care must be exercised on the part of those who offer themselves as interpreters of evidence. They must have their opinion first hand. They must, in short, be what they profess to be, skilled witnesses, skilled by experience.

At a late meeting of the Medico-Legal Society, a communication was received from Dr. John H. Packard, of Philadelphia, chairman of the obstetrical society of that city, asking its experience of the law extending the principle of confidential communications to physicians, and whether, in the opinion of that body, it is advisable for their brethren of Philadelphia and the State of Pennsylvania to take steps to secure the passage of a like act.

The question was referred to the permanent commission for consideration, who reported that the experience of the Medico-Legal Society, and it is believed, of the legal and medical profession of this state, touching the working and efforts of the law referred to, proves the wisdom of the law, and commends it to their earnest approval; and that an affirmative answer should be given to the inquiry whether it is advisable that steps should be taken to secure the adoption of a like law in the state referred to.

Regarding the statutory provision in New York, they say that since the revision of the statutes, in the year 1828, the following has remained unaltered:

"No person duly authorized to practise physic or surgery, shall be allowed to disclose any information which he may have acquired in attending any patient, in a professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon."

The rulings of the court upon the meaning of this language, have been uniform, but the might of judicious authority seems to be that it is the priviledge of the patient or party to the action, and not of the physician or witness, and that if no objection be interposed by the party, the physician may be compelled to testify.

But the protection and privilege it affords are deemed necessary to its full discharge and to that perfect confidence which should exist between physician and patient, needed in the treatment of maladies, either bodily or mental, and that the law finds an equally cogent justification in considerations of public decency, and in the preservation of the peace and happiness of families.

The exposures prevented by the statute would generally cause only pain, with no corresponding good; and over all such cases, the veil of confidence, protected by law, should be drawn.

A debate arose after the presentation of the report, during which one of the legal gentlemen present, Mr. Riddle, remarked that the rule in New York concerning information obtained by physicians and surgeons in the course of professional attendance on a patient, and which was necessary properly to prescribe for or treat the latter, is that such information is confidential or privileged, but the privilege is that of the patient, who may waive it and allow the physician or surgeon to disclose the information on the witness stand. This waiver may be implied as well as expressed. If the patient is present, or represented at the examination of the physician or surgeon, and has the right to be heard but makes no objection, he is deemed to have waived his privilege, and the evidence is received and considered; but if he is not present or represented, then the physician or surgeon cannot disclose the information, because the patient's absence cannot be construed into a waiver of this privilege. On the probate of a will, the physician was permitted to disclose communications made to him by the deceased in his illness, to show his want of testamentary capacity, on the ground that the person whose privilege was this confidential communication was dead.

In view of the importance of the matter discussed, we would respectfully suggest that societies of states not already having such a law, look into this question, and take steps looking towards the passage of a law similar in its intent to that passed by this state in 1828, above quoted.

At the meeting of the Medico-Legal Society, held May 2d, 1877, Dr. W. G. Stevenson, of Poughkeepsie, N. Y., read an elaborate and valuable paper on "CRIMINALITY," of which the following is a very full abstract:

The evolution of humanity ever has presented problems to be solved, and phenomena to be interpreted; and eager minds in all ages, have striven to obtain the key which would unlock the mystic laws of creation, and reveal to man the rule which directs his actions and interprets his responsibilities. Ignorant alike of his origin and destiny; unable to comprehend the relation he sustains to external nature or to interpret her phenomena; impotent to resist the influence of the unseen but mighty forces which constantly displayed themselves in his presence, man recoiled in terror, and in abject fear prostrated himself before the power which exhibited itself in such majestic grandeur, but with such terrible reality. He ascribed to these blind forces personalities, and supplicated them as Gods, to gain whose smiles or shun whose frowns an ignorant humanity propitiated by offerings and sacrifices.

Thus was erected the shadowy structure of mythology, whose foundation stone was ignorance, and whose frame-work was composed of the capricious imaginations of an infant age.

But as by observation and experience, man learned to know the truth and thereby to dissipate the superstition of the past, so, by the accretion of knowledge, he began slowly but surely the demolition of this delusive structure, and it tottered to its fall. Investigation has abundantly demonstrated, as a fact of primary importance, that nerve tissue is essential to the production of at least the higher phenomena of animal life; and that these phenomena vary in degree and character in proportion to nervous development.

From the lowly forms of animal life, whose nerve centres produce only reflex action in its simplest expression, upward through every series of progressive development, with the super-additions of nerve centres which add to the complexity of nerve function, there is accumulated evidence that every such additional centre but furnishes a source of new power, potentially capable, within certain limits, of modifying the action of subordinate centres, yet, nevertheless, incapable of wholly negativing their specified functions.

Thus, the organic nerve-cell presides over nutrition, so far as the simple vegetative growth of an animal is concerned, its action is all sufficient; but, in order to connect simple organic growth with the phenomena of animal life, an additional centre force is needed, and there are evolved the reflex centres of the spinal cord which unite vegetative growth with animal action. The sensory centres being next evolved, there is the possibility of sensory, added to organic and reflex action.

But yet there is no consciousness of life, of motion or sensation. Evolution goes on, and the brain, the conscious centre of that energy which presides with such mysterious power over the thoughts and actions of man, is produced.

To fully understand the functions of the brain, necessitates a knowledge of the functions of the spinal and sensory centres; for there are acts performed by man which bear the semblance of conscious volition, and yet, when correctly interpreted, give evidence only of the automaton action of the reflex centres of the spinal cord and sensorium.

Although a few cases are known in which limited nerve action resulted without the existence of the proper nerve elements, as fibres and cells with their prolongations, yet it is an accepted fact that nerve force only exists within the boundaries of the nervous structure, and that this nerve force is generated not in the cells, but also in the fibres, as even when rest, oxygen or strychnine restores nervous energy after its complete exhaustion in a limb removed. Nerve force is not generated by any volitional effort.

As magnetic, frictional and statical electricity are only different forms of expression of the same energy, so a simple impression, sensation, ideation, emotion and volition are but different forms and expressions of the same nerve force, and come from the special molecular structure of the organ through which they are made manifest. This unity of nerve force precludes its intense expression in more than one way at a time. So that if there is great bodily fatigue, mental work is impossible, and *vice versa*; neither can volition hold full rule in the presence of deep emotion.

Nerve energy is transformed into motion as evidenced in muscular action. It is also transformed into heat, but it is not known whether this is an immediate or secondary result. There are a few instances recorded which seem to show its transformation into light, and it is well known that in certain animals electricity is the result of its metamorphosis.

From these data, the conclusion seems authorized that at least a partial correlation exists between the physical forces and the energy resulting from nerve action,—partial correlation—because, while the evidence may permit the conclusion that nerve force is transformed into motion, heat, light and electricity, it does not authorize the conclusion that these can be reconverted into nerve force.

It is important to remember the fact that the character of nervous and mental phenomena is determined by the condition of nerve centres, whether the condition is one of development of the centres themselves, or of modification by disease, or by foreign substances.

The existence of the spinal cord alone predicates the possible existence of automotor reflex action, which, though unconscious, gives evidence of the use of means to a special end. Add to the spinal centres the medulla oblongata, and there results the involuntary and unconscious co-ordinate muscular movements of respiration, swallowing, coughing, and simple exclamation; conscious sensations of pleasure and pain, of taste and hearing, come by the addition of the annular protubrance, while the tubercular quadrigemina alone give visual power; the cerebellum co-ordinates the muscular movements of the eye, while the cerebrum not only determines the nature of the mental life, but it alone is able to bring varied sensations of nervous actions within the domain of consciousness.

The existence of these several centres is therefore necessary in order that the many acts of human life may be performed, and as a necessary corollary, it is found that in proportion as any centre is undeveloped, diseased or modified, nervous or mental action will be changed, limited or cease to exist.

That mind is influenced by and dependant upon the physical condition of the brain, is again evident, when it is remembered the effect caused by poisoned blood on all mental expressions.

Hashisch, opium and alcohol, for example, weaken the will, exalt the automatic action of the brain, disturb perception, exaggerate self-consciousness, distort the emotion, dethrones reason and cause moral terpitude.

Diminish the normal blood supply to the brain, and the mind instantly changes its character; restore the needed amount and the mind promptly responds to the altered condition.

Old age, injury, fatigue—anything which impairs the normal nutritive supply of the nervous centres of thought, directly modify intellectual and moral manifestations, and the conclusion is irresistible that every psychical manifestation has a physical antecedent; that cause and effect are as certainly established within the realm of mind as of matter.

To explain the how and the why of mental action as a result of physical conditions, is impossible. So, too, is it to explain how electricity comes from the union of metals with an acid; or how life springs from a seed; or perfume from a flower. They are ultimate facts, and as such they are beyond the boundaries of explanation. But however complex the problem, the fact remains that definite conditions invariably produce definite results; and there is no more reason why a divorce should be given in the one case than in the other.

In solving the problem of criminality, it was the purpose of the author to rely chiefly upon the evidence of nervous physiology, and while he would not be able to present in detail the many facts at hand relative to mental phenomena, he would nevertheless endeavor to cite such as may be needed to sustain the position that *criminality is a neurosis*, and originating in either an inherited or an acquired condition of the brain; whether it be a condition of positive disease, or of mere non-development of certain faculties, the existence of what would preclude the possibility of crime.

The doctor then considered the question of the equality of man in things which pertain to his acts in life, for if equality exists, it is necessarily evident that we may the more easily formulate a rule by which to measure human action; whereas, if equality does not exist, it is apparent that we must measure each person's acts by some standard of his own, with special reference to his individual organization and surroundings, and come to a negative conclusion, both in a physical and intellectual sense. Each individual of the human race possesses a certain brain organization which will admit of intellectual *and moral* development to a certain degree; but no discipline, no method of education, no power of the will can advance it beyond this limit! Thus far and no farther, is the dictum of creative energy!

With respect to the brain, one is capable of receiving and assimilating certain impressions of a specific nature by which a definite character of mind is formed, while another is so organized as to receive and assimilate impressions different in quantity and quality; and there results a mind of peculiar endowment and force. And here it is important to observe that the reception of impressions by the brain does not of necessity predicate the nature of their assimilation; for as the different elements of food to the general system are selected and assimilated by different tissues, and produce bone, muscle, nerve and blood, so the nature of the assimilation of mental impressions varies according to the potential nature of the brain tissue, whose duty is to transform impressions into ideas and modes of thought.

Individuals differ from each other intellectually, because of the potential character of brain tissue which in one gives great inborn capacity to assimilate impressions, while others are unable because of an inferior or weaker inborn capacity of brain structure to receive more than the simpler impressions from life's experience, and thus the mode of thought and action correspond with such statical energy of organization.

Nations and peoples differ from one another in their ideas of law and civil government, religion and morals; and these differences have existed from the earliest monumental history of man, and as strongly mark the present diversity of races as do the color of the skin or form of the skull. These intellectual variations result from the different brain capacities of the several species, and thereby absolutely preclude an intellectual equality except through amalgamation by which the superiority of one is depressed while the inferiority of the other is elevated—until a temporary equilibrium is produced.

Considering that sufficient proof is offered that these differences do exist, the author discussed at length how these differences were transmitted from parent to offspring, in which he indulged in quite an extended journey through heredity in its influence in forming the character of instinct, perception, intellect and will; and also the interesting question as to its influence over the appetites and passions including all the moral impulses, either natural or morbid, of man's nature, and the pathological conditions to which this physical and mental life are subject.

This brings us into the immediate presence of the criminal, and evokes an analysis of those physical and mental antecedents which give the bias to his individual character, and which so irresistibly impel him to crime.

Testimony is conclusive in establishing the heredity of many neurotic diseases, such as a simple nervous temperament; neuralgia, chorea, hysteria, hypochondriasis, inebriety, *criminality*, insanity, whether perceptional, emotional, volitional or maniacal, or as general paralysis, idiocy or dementia.

Assuredly it is a fact which none deny that the offspring of nervous, insane, epileptic, inebriate, consumptive, scrofulous or criminal parents, are more liable to develop some special form of disease or character, than those whose parents are free from any vitiating cause. They have organizations which render it not only more possible but more probable for ancestral vice to appear, but the special form this vice may assume is not necessarily determined by the parent.

Many neurotic diseases, like physical forces, are correlatives of each other. They are metamorphosed oftentimes in their transmission, so that what was neuralgia in the parent is chorea, or hysteria in the offspring, or chorea or hysteria may be transformed into epilepsy and thus into insanity, and the insanity may in a third generation develop phthisis, dipsomania or criminality, or conversely criminality or drunkenness may engender epilepsy or madness; and thus through the entire category of nervous manifestations testimony is added to sustain the fact that cause and effect are as invariable in the intellectual and moral as in the physical world; and that through heredity the physical, intellectual and moral forces of the ancestor largely determine the physical intellectual and moral forces of the offspring.

In this connection, it is important to remember that the conditions or factors which so influence character may lie dormant in one generation, existing only as potential elements which may spring into activity at any time when influenced by favorable surroundings.

There is a diminished stability of organization; an equilibrium more easily disturbed, and which, when moved from its balance, is less liable and less capable of resuming its original position.

A neurosis existed in the family line of the Cæsars which developed epilepsy in Julius Cæsar; made a valetudinarian of his nephew, the emperor Augustus; disfigured with disease the face of Tiberius; caused Caligula to be pale, sleepless, and delirious, and gave Claudius a weak physical organization, while the excessive cruelty of Nero may find some excuse in the fact that the morbid nerves of the Cæsars had in him caused insanity.

Thus is seen the immediate and direct results of a bad inheritance; and while we cannot foresee the type of degeneration which will follow ancestral vice of character, yet we can prophetically declare that some form of physical, intellectual or moral degeneration will come from it and thereby determine the possibility of crime.

Accepting then the physiological fact that conscious mind and brain are intimately united as cause and effect, and that the character of the mind depends primarily upon the nature and degree of molecular brain development, which development is measured according to the inherited capacity of the brain tissue, which capacity differs in each and every person, we must believe that each individual has through his inherited organization a special power of actual and possible brain energy, and that in order to justly judge of his actions and his responsibilities, his own individual organism must furnish the only reliable standard by which to determine facts.

By this rule only can the demands of justice be satisfied in dealing with that large class of humanity known as criminals, whose deeds have furnished so many pages of the world's history.

To the question, "why is one man a criminal?" the answer is, for the same reason that another is a moralist, or an honest law-abiding citizen. Either an inherited organization, having morbid antecedents gives the bias to development and action, or a constitution, originally well endowed, is so modified by morbid influences as to render possible, subsequent moral alienation.

Criminals are such, either because they inherit a brain structure potentially incapable of generating moral faculties, or through morbid influences the development of mind does not evolve sufficient moral strength to guide and control the lower propensities of man's nature.

In either case, however, criminals are generally speaking, diseased elements or members of the body politic, which are born of it, belong to it, and are of necessity, correlated with it in every stage of human evolution. Positively diseased in that they bear evidence of bodily infirmity, neurotic disease largely predominating either in the milder types or as epilepsy, inebriety and insanity. These together with scrofula, and tubercular development, determine with certainty the fact of bodily and nervous degeneration.

Negatively this position is strengthened by the fact that, being perfectly conscious of punishment received for past offenses as well as a certain assurance that retributive justice will be executed for every offense in the future, they yet close their eyes to all results and apparently without dread of the coming day of wrath, rush wildly, heedlessly, remorsely, into the seething vortex of criminality, and pause not until the strong arm of the law interposes for the protection of human society. But with all this, there is moral obliquity—a perversity of thought and desire with violent passions, which being uncontrolled by higher moral faculties (not because the perversities are greater than in other men, but because the moral force is less) there result immoral, criminal acts, which are correct exponents of the organic cause by which and through which they alone exist.

It is no more difficult to accept the belief that brain development in the evolution of mind may stop short of completely unfolding the moral faculties, than it is to believe that it may, as it certainly does in many cases, stop before high intellectuality is attained, and the moral sense being the highest as well as the last in the gradation of mental evolution, it is the first to exhibit evidences of degeneration, which unless checked or neutralized by some controlling influence, increases in each succeeding generation, until at length, the morbid action culminates in its positive and irreparable destruction.

And what then?

With only a feeble moral sense, or perhaps, with its total obliteration, what incentive is there in the human mind to shun wrong doing?

None at all! but man is left to battle with the storms and tempests of life without a helm, or pilot to guide his frail bark to a port of safety; but tossed about upon the angry billows of temptation, is it indeed strange if, by and by, his craft is stranded on the shoals of petty crimes, or goes down to destruction in the dark cold gloom of murder?

Evidently then, in some instances at least, criminality is not the immediate offspring of uncontrolled or vicious passion, or impulse which might be restrained by an effort of the will; but it represents a symptom of degeneration of the nerve centres, and the perpetrated crime itself, is but an outward expression of the inner condition of man's development, akin to that condition of mind which generates low and vulgar ideas, having their counterpart in brutal instincts and words.

In truth, it is undoubtedly connected with diseased or non-developed nerve structure in the higher centres, as in epilepsy, etc., which may be to a degree, and in some persons is remedied or modified by proper treatment and education; but when, as is too often the case, it results from a vice of organization, incapacitated by a bad descent, from evolving sufficient sensibility, it then becomes an irresistible fate. The cause is in past physical antecedents, and as a sequence of this cause the criminal takes his place in human society. Yes; he is a legitimate member of society—in that his individuality sprang from, and is correlated with ancestral taints of character over which he has no control, and although free under civil law to choose his following as a member of society, to shun its wrongs and hold its virtues, yet being bound through heredity by the forces of his organization, he occupies a natural position among the vast throng of mortals whose individual acts, whether of virtue or of vice, when aggregated, constitute the history of humanity.

Is it not then an important question, to inquire relative to man's acts in life, and does not conviction follow after duly reflecting upon the complex nature of the problem to be solved and the innumerable number and variety of elements, which, as factors, make up the grand total of human life, that ere judgment is given upon any case of criminality, passion and prejudice should be eliminated and manhood exalted by giving reason empire over emotion, holding steadily and firmly the scales of justice which, on the one side, holds the act committed, and on the other, the organization which impelled the crime, and only by proper balancing of which, can right be vindicated or justice measured to man?

Criminals belong to us as a legitimate inheritance, and are exponents of our civilization; their crimes, like insanity, varying and assuming different forms under different stages of social evolution.

The doctrine that crime can be diminished through fear of punishment, is erroneous, as criminal statistics demonstrate. Were crime the result of personal spontaneity, this might be true, but since it springs from the secret forces of organization, it is but a symptom of moral alienation, resulting from an inherited vice of character, over the origin of which the possessor had no control. How can he, in the name of common sense, do differently than he does? Nay; he cannot; his acts are as the "chastity of impotency, or the silence of the mute—a necessity." He who has no moral faculty, can not be held responsible for moral wrong-doing; and he who is morally dead through the vice of an inherited nature, is absolutely beyond the jurisprudence of penal retribution.

From all this, the conclusion is drawn that man, in his acts, is not beyond the realm of law, and that his responsibilities in life are to be measured according to the standard of his personal organization, the perfect knowledge of which gives the key which will unlock and interpret the mysteries of human life and action.

THE NEUROLOGICAL SOCIETY.

The annual meeting of the society was held on the evening of Monday, May 7th, at which the newly-elected officers assumed their duties. They are as follows:

President, Edward C. Seguin; *First Vice President*, Eugene Dupuy; *Second Vice President*, Edward C. Spitzka; *Secretary*, Geo. W. Wells; *Corresponding Secretary*, Max Herzog; *Treasurer*, Edward C. Harwood; *Counsellors*, Prof. W. A. Hammond, Prof. J. C. Darby, Drs. J. C. Peters, Clinton Wagner, J. G. Kiernan.

After preliminary business, Dr. Peters retired from the office of president, and delivered "the reins of government" in the hands of his successor in the following terms:

VALEDICTORY ADDRESS OF DR. J. C. PETERS.

GENTLEMEN: In resigning the post of president of this society to my distinguished successor, I wish, more formally than I have yet done, to return you my sincere thanks for the kind partiality which you have always shown me, and for the generous and able manner in which you have always seconded my efforts for the welfare of this association, and have filled up all my shortcomings.

It is unnecessary for me to bespeak for Dr. Seguin the continuance of the same kindness, and an equally active co-operation with him, for you know that he is willing to do all in his power to thoroughly promote your prosperity and to elevate the standard of he proceedings of this society.

I need not impress upon you the great importance of societies, devoted solely to the advancement of topics of great special interest, and none can be more important than a banded brotherhood, occupied exclusively in the study of diseases of the nervous system.

These comparatively small special societies accomplish more scientific and better practical work than those of more general scope.

We need only look to the high position of the Pathological and Opthalmological, the Gynæcological, the Obstetrical, the Dermatological, the Medico-legal, the Public health, the Laryngological societies, etc., etc., in order to induce us to strain every nerve to maintain our well-earned position fully abreast of, or even well in advance of, some of them.

The composition of this society has a broader and higher scope than that of any other special society, except, perhaps, the Pathological society. A large proportion of the practice of every physician is laid among diseases of the nervous system, and it has been our endeavor not to limit our membership to mere neurologists, but to include many able general practitioners, who are familiar with the nervous diseases of the heart, lungs, liver, gastro-intestinal and urino-genital organs, etc., as well as those who have made a life study of the brain, nerves and sympathetic system. They can bring a large quota of experience in diseases of the nervous system, which rarely falls to the lot of the pure neurologist; and they can both be vastly benefited, as I have had ample proof, by close contact with and free discussion with each other.

It was for this reason, I presume, that I, whose highest ambition has been to be a pure physician and therapeutist, have been sandwiched in the presidential chair between two of the most widely known neurologists that the country has ever produced.

I am most happy to hand over this society to my successor, not only in a prosperous condition, but with a great vista of usefulness clearly opening up before it, and which I am sure that Dr. Seguin will both lengthen, widen and embellish.

Again thanking you, I gladly resign the chair unto the able man we have so wisely selected to fill it.

Dr. Seguin in accepting the responsibilities and trials of a successful society, spoke as follows:

REMARKS OF E. C. SEGUIN, M. D.

GENTLEMEN: It is a pleasant custom that a newly-elected presiding officer should be allowed to stand face to face with those who have honored him with their votes, and return thanks. In my case this custom is the more appropriate because I feel the need of assuring you that your action in this matter was quite unexpected, and I am sure very undeserved by anything I have done.

With your friendly assistance, I shall endeavor to faithfully and efficiently discharge the duties of the office to which you have assigned me.

Our retiring president, Dr. Peters, has just ably reviewed the labor done by the society during the past year, and the record is one with which you may well be satisfied. But much as you have done, there yet remains much more to be achieved.

We are physicians who, under the name of Neurologists, cultivate more especially one of the many fair fields in the great domain of medical sciences; and while we probably all lay claim to being physicians in the broad sense of the word, we are justly proud of the subject we have undertaken to study as exhaustively as possible.

This field of Neurology is broad and rich, and lies next to other equally valuable parts of the same great domain. We are thus in intimate association with Psychology, and even Moral Philosophy, with Forensic Medicine, with Public Hygiene, with Ophthalmology, Gynecology, etc.

The soil of our chosen field is that noblest part of animals, the Nervous System; the system which serves more than any other to mark the progress of evolution in the zoological series, and whose surpassing physiological attributes make man what he is. And under this general title of nervous system, we not only include the anatomical structure and common physiological properties of the nerves, the spinal cord, and the brain, but we even bring the finer functions of the cerebrum—the so-called Psyche or soul—under the edge of our analysis. We study, with our various methods, complex moral as well as simpler physiological perversions.

To cultivate such a field, one which has already been the theatre of great and brilliantly productive labor, we need skilled workmen; men not only possessed of book-learning, keen in criticism, and fluent in speech, but also men expert in the use of the instruments with which the field is to be cultivated.

The instruments I refer to are clinical study, pathological anatomy, anatomical investigation, and physiological experimentation. A furrow in our field, to be made productive, must be fully tilled by these four great agencies, and in this connection I may be allowed to lay stress upon the necessity in which we are of aiding one another, partly because few of us can hope to attain great skill in the use of more than one or two of these instruments, and because, as it seems to me, our work is all the better, yet not less creditable, for being trimmed and perfected by other laborers. I see before me, in the ranks of the Society, the disciplined minds and the skilled hands needed in the field of neurological medicine. You have among you microscopists, experimental physiologists, men apt in clinical observation, medico-legal experts, keen critics, and able writers. By individual labor, each in your special branch, you must produce much valuable matter, but by conjoined efforts, in proper associations, you may really advance medical science, and give this Society an honorable reputation at home and abroad.

At the risk of imposing on your patience I shall now briefly refer to a few of what I take to be the great neurological questions of the day, or, in pursuance of my allegory, the great and fertile furrows in our favorite field.

It will be generally admitted, I think, that a subject just now of surprising interest, is that of the localization of psycho-motor functions in limited parts of the cortex of the cerebrum. Although only six years have elapsed since Fritsch and Hitzig first showed that the cerebral cortex was excitable, and only four years since Ferrier began his remarkable experiments and publications on the so-called motor centres of the brain, the subject has assumed vast importance, and already commands a large literature. Experimental researches pro et con, have been published in all civilized countries; and among these investigations, I may mention Dalton's and Putnam's in favor of Ferrier's hypothesis, and Dupuy's against it, as American contributions. In the clinical and pathological fields, the dispute is very active, and we find such men as Brown-Séquard annd Charcot opposed to one another, at first in debate in the Sociéte de Biologie, of Paris, later in the journals; the former great authority publishing a long series of articles in the London *Lancet*, tending to overthrow the hypothesis of the existence of psycho-motor centres in the cerebral cortex, while Prof. Charcot and his pupils, and numerous observers in various countries, are constantly sending to the medical press well-studied medical and surgical cases, with post-mortem examinations in support of the theory. It strikes me that nothing could be more creditable to this society, than that it should furnish during the coming year, experimental and pathological data bearing upon this question; all worked out with the exactness and fulness demanded by positive medicine.

Another question, which, to my mind is just now of importance, is that respecting the setting up of cerebral symptoms by peripheral or vascular disease, and by diathetic conditions. The problem resolves itself into a number of serious questions, each one of which is a fruitful subject for work. Allow me to enumerate some of them:

How frequently and by what mechanism do errors of refraction and insufficiency of ocular muscles produce headache, pressure and pain in the cervical and occipital regions, dizziness, etc.? Drs. Weir Mitchell and Thompson, of Philadelphia, have laid the foundation for a thorough study of this matter.

How frequently, and in what manner does utero-ovarian disease set up back-ache, cervical spinal neuralgia, obscure cerebral symptoms, and even melancholia?

How often and by what mechanism do irritations in the male genital organs produce paraplegiform symptoms, hysteroid symptoms, spinal neuralgia, etc.?

How frequently do such diathetic conditions as oxaluria, or lithæmia give rise to headache, dizziness, insomnia, indisposition to mental exertion, extreme depression of spirits?

What is the precise relation between such symptoms as have been enumerated and general long-continued mal-nutrition, or over-waste?

I attach so much importance to these questions because if we solve them, we shall almost have the key to the more general problem whether hyperæmia is or is not a frequent proximate pathological cause of headache, dizziness, sense of pressure, or emptiness or fullness in the head, blurring of sight, indisposition to mental exertion, nervousness; in short the various symptoms which some patients not inappropriately designate in a group as "bad head." I am afraid that at the present time hundreds of cases, which are really very complex in pathology and ætiology, are grouped together under the (to me) somewhat crude designations of hyperæmia and anæmia of the brain, and subjected to a treatment which is designed by deduction from certain hypothetical views instead of by induction from selected experience, and from well-performed experiments. I trust that the subject will be brought up before the society that we may do something to throw light upon these obscure morbid conditions, which are so common in our American life.

Naming a third great subject will suffice. I refer to one in which the society has already taken great interest; *viz.*, the pathological anatomy of mental diseases so-called. There are several gentlemen before me, well fitted by special training to continue their exact and scientific clinical and pathological researches into insanity, and I hope they will frequently lay the results of their labor before the society.

Once again, gentlemen, I tender you my sincere thanks for the honor you have done me.

At a previous meeting of the Society, Dr. Jas G. Kiernan, of N. York City Asylum for the Insane, Ward's Island, read a paper on Katatonia, a new form of insanity with peculiar motor symptoms.

At this meeting the paper was discussed.

As a preliminary, Dr. Kiernan gave a full resumé of his paper, containing the points of the paper, as follows:

REMARKS OF DR. JAS. G. KIERNAN.

The disease is characterized by an irregularity or, as it has been called, an insanity of tension, whence the name Katatonia. It is of a cyclical character; maniacal, melancholic and cataleptoidal conditions alternately, with more or less perfect convulsive attacks, pathetic delusions of grandeur, voluntary rhythmical movements of the fingers, and a tendency to talk and act theatrically.

The patients attacked by the disease are under the age of thirty, and inherit a strumous diathesis; they are, comparatively speaking, temperate in the use of stimulants, but are, as a rule, addicted to masturbation or sexual excess. The disease was first clinically demarcated by Dr. Kahlbaum, of Gorlitz, Prussia, but two years before, Meynert described it "as a peculiar form of melancholia attonita, characterized by a series of fluxionary excitations, (toned down by coexistent cerebral pressure,) microscopic exudations, ventricular dropsy and perhaps premature ossification of the sutures. From these would result forced and theatrical activities on the part of the patient.

"The convulsive element representing the irritative factors getting the upper hand, the cataleptoid the triumph of the depressing factors.

"The ideas of grandeur following upon stupor were the results of ideas previously caused by fluxionary conditions." These views of Meynert were confirmed by the macro- and microscopical examination of a case coming under observation.

The patient whose spinal cord and brain were examined was thirty years of age, unmarried, moderate in the use of stimulants. He had melancholia, manaical, and cataleptoid alternations, made well marked rhythmical movements, and had pathetic delusions of grandeur.

The disease had existed for two years, and the patient died of phthisis and tubercular enteritis. The post mortem and microscopical examination was made with the assistance of Dr. Spitzka.

Lungs were found to be tubercular, as also were the intestines and peritoneum; other abdominal and thoracic organs normal; head-scalp thin; cranium thick and not adherent to the dura mater, which was normal. Subarachnoid space filled with a number of brownish flakes of a gelatinous consistency, most of these drained away with cerebro spinal fluid, but a few were quite firmly adherant to the underlying pia; minute blackish or dark-brown grains were disseminated through these probably exudative products. Pontico chiasmal lamina perfectly healthy, clear, transparent; cerebello-medullary lamina opaque, whitish dense bands in it; *pia* along the larger, and in some instances along the finer vessels with minute pale, yellowish, whitish and reddish bodies, supposed to be tuberculous. In the sylvian fossa, over the Island of Riel, there was a fusion of the leptomeninges.

A whitish spot, measuring 1½ inches in every direction on the under surface of the A. basilares, otherwise the large veins were filled with dark continuous corgula, or with chains of whitish connected thrombi, such as occur in the ultimate agony when prolonged in exhaustive diseases. The fine network of vessels was well injected, and this was especially well marked over the Island of Riel.

CONVOLUTIONS few, simple and typical. The white substance of the centrum ovale of Vieussens, of the pedunculi, cerebellum, ganglia, and tegmentum, as well as of the medulla and pons, showed numerous puncta vasculosa, all of a strikingly venous character, in every direction the veins, and these alone, were filled with blood. This was also true of the cortex, and nowhere better pronounced than in the gyri-operti of the insula Reilli; the claustrum, which I have never before seen the seat of any marked injection, was filled with distended venous channels and puncta venosa. (Wherever, in the numerous post mortems I have made, a marked injection occurred, even in animals which had died asphyxiated, the color of the puncta was purple—*never blue.*) The gray ganglia at the base of the fourth ventricle, which depend for their color on the degree and kind of injection, as well as on the pigmentation of their cellular elements, appeared semi-transparent and cerulean in tint. Spinal cord; membranes healthy, no deviation from the normal standard whatever, cord itself decidedly anæmic.

Ventricles. A mucoid substance covered the parts at the base of these cavities, particularlv well marked at the calamus scriptorious of the fourth ventricle. Over the stria cornea of the left side, the ground glass appearance was visible. This passed gradually into the mucoid substance on either side.

Dilatation of the posterior cornua of the lateral ventricles with extension backwards, adhesion of the walls so extensive on the left side as to cause the complete separation of the apex of the posterior horn from the body of the ventricle, giving it the appearance of a cyst in the occipital lobe.

There was a beautiful venous injection of the ventricular lining. The mucoid matter on the floor of the fourth ventricle was found to consist of an accumulation of round cells, not surpassing a red blood corpuscle in diameter; some nucleated;

others not; all were perfectly colorless. Interspersed among them were larger elements, identical in every respect with white blood corpuscles. Isolated bodies of an oblong shape, with a distinct nucleus and pellucid protoplasm, were noticed. All these were imbedded in a granular mass, which showed a formation of imperfect fibrils. The arachnoid exudation consisted of the same matter, together with a fair proportion of red corpuscles, large flakes of pigment and round spheres, of a protein nature. The pia mater of the convexity exhibited numerous small nodules, most of which were molecular, others calcareous, and a few contained large and small polynucleated cells. These nodules were peri-adventitial, and hardly visible to the naked eye.

The cortical substance of the Island of Reil showed a marked increase of the neuroglia nuclei. The ganglionic cells (both pyramidal and fusiform) were normally contoured, processes well developed, protoplasm healthy, (in some cases diffusely pigmented), and nucleus round and clear. Free lymphoid bodies were accumulated in the pericellular spaces in prodigious numbers. In one instance, no less than twenty-three of these cells could be distinguished clustering around one pyramidal nerve cell of the third layer. Frequently, the nerve cell was altogether hidden from view by such cell groups. In this respect, the Island of Reil presented marked regional differences. It was found that areas varying from a line to an inch in diameter, were the seat of this appearance, while a similar larger or smaller adjoining area was either less involved or perfectly normal in this respect. The transition from the affected to the healthy areas was sudden.

The coats of all the vessels were entirely healthy, presenting no deviation from the appearance of cerebral vessels in sane subjects. The arteries were empty, the veins and many capillary districts filled with blood corpuscles; these latter were individually distinct, not compressed or fused by crowding, as has been described in the case of the stasis accompanying general paresis.

This engorgement was most marked in those areas in which the accumulation of lymphoid bodies was furthest advanced. The peri-adventitial spaces were filled out with similar bodies in the case of the vessels referred to.

The same appearances in a lesser degree were noticed in the operculum, and the convolutions bordering the anterior part of the great longitudinal fissure. The remainder of the cortex cerebri appeared perfectly healthy. The accumulation of lymphoid bodies was still more marked in the nucleus lenticularis than in the claustrum and Island of Reil.

The cerebellum, olivary bodies, nuclei of the cranial nerves corpus striatum, thalamus, and corpora quadrigemina presented no deviations from the normal standard. Spinal cord: The nerve cells of the gray cornua were perfectly healthy; a delicate granular material filled the dilated pericellular spaces; central canal open. The white columns showed everywhere an increase in the number and thickness of the connective tissue septa, and of Trousmann's cells. With this the medullary sheaths had undergone a slight degree of atrophy, while many axis cylinders were hypertrophic.

These conditions were most marked in the antero-lateral columns of the cervical portion of the cord, although the posterior were not free from it. Here it was limited to the peripheral portion, and a small area at the base of the posterior intermediate sulcus. The anterior pyramids of the medulla oblongata exhibited the same change as the spinal cord.

Conclusions. 1. The pia mater presented signs of an old tubercular process which had become latent.

The encephalon was the seat of a passive venous engorgement, which had been of long standing. No mechanical obstruction to the venous outflow could be found as the cause of this engorgement, and we must therefore suppose it to have depended on vaso-motor anomalies.

3. The gelatinous exudation of the arachnoid and pia can not be considered an inflammatory product, but rather as a simple filtration of molecular matter and blood discs through the walls of the distended venous channels.

4. The accumulation of lymphoid bodies by diapedesis around the ganglionic cells was in a like manner the result of the vascular stagnation. The fact that certain cortical areas were more severely affected than others, is to be attributed to peculiarities in the distribution of certain venous channels.

5. This accumulation of lymphoid bodies, of whose identity

with blood corpuscles (both red and white, particularly the former) I am fully convinced occurs to such an extent only in one other cerebral condition; namely, that which accompanies the severer forms of typhus fever. The similarity between the pathological appearance of the cerebral cortex in katatonia and typhus is truly striking; the chief difference is that while in the former certain parts of the cortex are chiefly if not exclusively affected, in the latter the whole encephalon is involved equally. It should not be forgotten that a few of these bodies (one or two in the pericellular space of one out from twelve to a hundred pyramids) occur in health, but so rarely that they have to be sought for, and are not, as in this pathological condition, so numerous as to actually conceal the nerve cells from view.

In lesser degree such an increase of the lymphoid bodies takes place in many forms of insanity associated with atrophy; their origin here is, however, different.

6. No destruction or degeneration of the essential nervous elements, the cells and fibres, was to be found, for no importance can be attached to the diffuse pigmentation of a few of the pyramidal cells. Many subjects who have never manifested any symptoms of mental alienation show the same condition.

7. The condition of the spinal cord and anterior pyramids observed is to be considered as a mild grade of sclerosis, approximating senile sclerosis in character. In a patient of this age, such a change is unquestionably pathological. I am inclined to consider it as a degeneration due in part to malnutrition, partly to disease of the motor tracts, in consequence of the long continued and oft repeated cataleptoid conditions. In this it offers a parallel to "Charcot's sclerosé laterale," as found in an old case of hysteric contracture, where the connective tissue hyperplasia was not the cause of the contracture, but the result of the consequent long continued disease of the motor periphery.

Vaso-motor anomalies frequently occurred; the first sound of the heart being at times absent, the neck pulse more frequent than the wrist.

The prognosis was stated to be good by Dr. Kahlbaum, but the conclusion drawn in the paper was opposed to this. The duration of the disease is from two to five years. The treatment was mainly symptomatic and restorative. The chief cause of the disease was the inheritance of a strumous diathesis, the pathology and genealogy of the patient leading to this conclusion, and to the belief that infantile tubercular meningitis was more frequently recovered from than was generally supposed. The occurrence of Katatonia in epidemic form, as claimed by Kahlbaum, was denied, the epidemic being attributed to morbid impulse, simulating a few cases of Katatonia that had occurred. An explanation was offered of similar epidemics by Dr. Hammond.

Dr. Edward C. Mann asked the reader of the paper whether the initial symptoms were of short duration; and if so, was there not a manifest tendency to pass into a state of dementia?

Dr. Kiernan replied that in the majority of cases the initial symptoms were of rather long standing. They do not exhibit a tendency to pass into dementia very suddenly. Most of them do if the disease lasts five or six years.

Dr. Spitzka said that having made the autopsy in the case, and being responsible for the pathological deductions, he could merely agree with the clinical points presented by Dr. Kiernan. Since the disease was a new form of insanity, he had devoted particular attention to the microscopical analysis, in order that Katatonia might eventually stand on as firm a pathological as it does stand on a clinical basis.

In this connection, he continued, it must be confessed that there is no special change in the nerve elements which could be called characteristic of this disease. As has been heard in the *resumé*, the same preternatural accumulation of lymphoid bodies observed in Katatonia is found in the brains of those dying from typhus fever. Perhaps this may serve to explain the similarity of the symptoms sometimes observed in the *stadium decrementi* of essential fevers, to a prominent phenomena of Katatonia, namely, the atonicity.

There was one peculiarity, however, in the topographical distribution of the lesions in this particular case, in which it differs from the similar condition of typhus fever. In the latter instance the cerebral cortex is *generally* affected, but here the change was concentrated in the Island of Reil and its operculum. That this localization may bear some relation to the peculiar symptoms on the part of the speech, such as the slow, precise, and theatrical (though disconnected) manner of talking described by Dr. Kiernan, is probable.

He would say *en passant*, that while he was diametrically opposed to Ferrier's deductions, and while he considers any sharp, abrupt demarcation of "centres" in the cortex as unphysiological, he must predicate a relation for the Island of Reil and the contiguous territory to both articulate and symbolical speech, for reasons discussed at the meeting in February. The venous stasis and lymphoid accumulations constitute two antagonistic factors, the former paralyzing, the latter stimulating the nerve cells of the Island of Reil, and thus producing the clinical paradox of an inhibited activity; verbigeration.

As to the slight connective tissue hyperplasia observed in the spinal cord, he attached no importance to it, and considered it a secondary, perhaps, also accidental complication.

At the previous meeting he suggested the propriety of employing nitrite of amyl in these patients, and in the course of the same week was invited by Dr. Kiernan to witness the effects of this drug, effects which were at first very striking.

Among others, one patient was introduced, who on being urged to answer three or four simple questions, answered slowly and with difficulty. He suffered from extreme depression and depressing delusions. He assumed a puzzled look when asked to tell how long he had been in the asylum, and passed into a cataleptoid condition, exhibiting wax-like immobility of the highest degree, his pupils being also widely dilated.

Ten (10) drops of nitrite of amyl were administered, and his whole condition changed like a flash. His pupils became contracted, he became communicative *and perfectly* rational, spoke freely of his past condition, and himself expressed astonishment at the change manifested in so short a time.

Subjectively a feeling of well-being was felt, and the depressing delusions were denied to have ever existed. These obvious and beneficial effects were not as transient as were anticipated, but persisted for many hours, and all that was necessary to insure a continuous effect, was to give the dose several times in the course of a day. In this case delusions returned, but they were of a positive character, not depressing.

He was well aware that the strong way which he proposed the administration of nitrite of amyl will be objected to by some. For instance Dr. Dupuy* has stated that the increase of blood in the brain of animals, after the inhalation of this drug, is not of arterial character, but that the blood is chocolate colored, and that the blood therefore must be supposed to be chemically changed.

Against this the speaker could urge but a single experiment, in which he found the blood brightly arterial, and the pulsations excursive, as well as the influence of the drug in his own person. The discrepancy in the results of the experiments may be explained by the difference in the doses employed, as he used such quantities as should be therapeutic in the human being. In the numerous inhalations which Dr. S. had indulged himself, he had not noticed any such injurious effects as would occur from the employment of a drug so dangerous as Dr. Dupuy claims nitrite of amyl to be.

Whatever be the explanation adopted for the action of amyl nitrite, it seems to act as a vaso-motor stimulant. By this is not meant that it increases the tone of the circular coat of the arteries, but that in any manner it increases both the *rapidity* and the *amount* of the cerebral blood-current; for all the symptoms, noticed after inhalation of the amyl-nitrite are symptoms of cerebral hyperæmia. Since the vascular condition in Katatonia is essentially a stagnation of the blood-current, with a diminished amount of arterial blood in the brain, nitrite of amyl, a drug which produces exactly the opposite condition, is clearly indicated.

Dr. Seguin said that he used amyl-nitrite on patients subject to melancholia in private practice, and apparently with beneficial results.

Dr. Dupuy said that he did not deprecate the use of amyl-nitrite as a therapeutic agent altogether, but still insisted that it changed the nutritive processes in a pathological manner. The track of the blood vessels in a dog's brain became marked by a white line of exudation corpuscles, and that the blood was of the color of venous blood. He asked Dr. Spitzka whether there were no lesions of the nerve cells, as he recollected seeing a plate representing the microscopic appearance exhibited at the last meeting.

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* Six lectures on the Pathology and Treatment of Nervous Symptoms. [Soon to be published.—G. W. W.]

Dr. SPITZKA replied that while the illustrations referred to represented pathological conditions, the latter did not effect the cells *as such*, but that there was an extreme accumulation of lymphoid bodies (white corpuscles) around the cortical pyramids. He did not believe that destructive or any palpable changes occurred in the first stages of several forms of mental alienation, or at all in some acute forms.

Dr. SEGUIN asked whether Dr. Spitzka had referred to examthematic or abdominal typhus as resembling Katatonia in the cortical changes.

Dr. SPITZKA replied that while he did not feel prepared to discriminate between these forms in this respect, the investigations to which he referred, were made in cases of the former species of typhus. About a year ago, Popoff made these investigations in Recklinghausen's laboratory, some curious misinterpretations, however, diminished the value of his observations. These were left unchallenged until the beginning of this year, when Herzog Carl, of Bavaria, showed that any such occurrences as an invagination of the ganglionic protoplasm by white corpuscles, producing nuclear segmentation, as described by Popoff, were out of the question, and the results of imperfect observation.

Herzog Carl also found that a similar condition obtains in some cases of cardiac disease, especially where obstructive to the return circulation. This bears out our attribution of the leucocyte diapedesis to the venous stasis.

In connection with Prof. Pallen's paper on menstrual neuroses, read before the Neurological Society, in April, which appears in another portion of this JOURNAL, the following remarks were made:

Dr. PUTNAM JACOBI being called upon, remarked that she had recently had occasion to pay a good deal of attention to the theory of menstruation, and quite agreed with Pallen that the so-called ovulation hypothesis, was insufficient to account for the facts. "I have endeavored elsewhere to show, said she, that this famous modern hypothesis, according to which the uterine hemorrhage constitutes a mere epiphenomenan of processes concerned in the development of the ovule,—really rests on a slender foundation of fact," at the same time she confessed that she failed to understand what Dr. Pallen means "by neuric causes," in this connection, nor the "nerve influences involved in cell growth," etc. She understood him to exclude from the theory, both the cell growth in the ovaries, and still more decidedly that determining the development of the uterine mucous membrane, for he emphasizes the fact that, on the one hand menstruation is known to continue after extirpation of both ovaries, on the other hand, even in the absence of a uterus and hence independent of the fatty degeneration of the so-called menstrual decidua. The numerous examples of vicarious menstruation, even when the uterus is apparently intact, examples to whose list Dr. Pallen has himself contributed this evening, all confirm the opinion that the real cause of menstruation is constitutional and not local. Local conditions determine the habitual direction of the menstrual flux, and also its periodicity, but the fundamental cause lies deeper.

For my own part I have been led to the unqualified adoption of the antique theory of a nutritive plethora in women, as the real cause of this periodical elimination of nutritive material,—material formed in excess of the needs of the individual economy, and in preparation for the demands of reproduction. This theory is well known to have reigned from Hippocrates down, until the discovery of the ovule in 1827, or rather of its spontaneous dehiscence, in 1847. Previous to this time it was admitted as a logical necessity that the sex upon which devolved the greatest cost of reproduction, should be endowed with a special richness of nutrition in order to render it capable of meeting this demand without annihilation. This logical necessity still exists, and it is as absurd to suppose that the formation of an ovule would suffice for reproduction, unless special provision existed for the accumulation of extra nutritive material,—as to suppose that a tree could develope branches from buds or seeds, for whose nourishment were provided no special currents of sap. The menstruation is the exact analogy of the accumulations of nutritive material along the stem of a plant, which constitute the nodes, each of which is destined under favorable circumstances to develope into a branch. It is a great mistake to consider normal menstruation as a phenomenon of animal, instead of as it really is, vegetable nutritive existence. The accidents of nervous irritation constituting the so-called "menstrual neuroses," nervous dysmenorrhea, epilepsy, chorea, hysteria, etc., depend ultimately upon a denutrition of nerve centres, owing to a disturbance in the equilibrium, normally maintained between the nutritive provisions made for them, for muscles, and for the development of the embryo. When the nutritive balance is disturbed from any cause, the nervous system is the first to suffer, while the reproductive nutrition, being the most rudimentary, is the last to be given up.

After shock, the assimilative capacity of all tissues is probably lessened; less nutritive material is taken up into the blood, and from that again less is withdrawn by nervous and muscular elements. If assimilation diminishes out of proportion to the diminution of absorption, there is a double result; the tension in the blood vessels is raised at the same moment that the capacity of resistance to pressure in the nerve centres is diminished. Hence, as the vascular tension reaches its maximum just before the menstrual hemorrhage by which it is lowered, the irritability of nerve centres also reaches a maximum, and is manifested in the so-called "menstrual neurosis." In Dr. Pallen's first case where syncope from cerebral anemia is said to have occurred, it would seem that the anemia was caused by vaso-motor spasm of the cerebral blood vessels.

She should be interested in knowing whether the nitrite of amyl was prescribed because the patient was menstruating, or because she had epileptiform attacks. For the latter, the remedy has acquired a decided reputation; but she believes she was the first to suggest its use in various nervous disorders of menstruation, especially pain.

The disturbance of nutritive equilibrium, to which she has alluded, is somewhat curiously shown in the history of peasant women with powerful muscular development, and regular and abundant menstruation. The balance is *plus* in the muscular and reproductive nutrition, *minus* in that of the nerve centres, and these are unable to resist the rise of tension in their blood vessels, caused by the development of the menstrual waves.

Dr. Pallen stated that his reason for considering menstruation entirely of neuric origin, was, in the natural history of the function, that it was, to use Dr. Mary Putnam Jacobis' own word, "an epiphenomenon." It did not make its appearance until the developmental action of the ovaries and uterus had, in a measure, been completed, and that it was interrupted by pregnancy, or disease or emotional cause, and that after about twenty-five years in the woman's life, it ceased altogether. Were it not dependent upon "ultimate-cell" cause in the cerebro-spinal centres, transmitted through the ganglionic to the vaso-motor and trophic nerves of the generative circle, in consequence of the development of the utero-ovarian structures, then it ought to be a permanent function of automatic life, such as bile-secretion or urine-secretion, which commenced at birth and continued through life. That menstruation could be modified by purely neuric cause, either emotional or molecular and reflex, was another proof of its epiphenomenal nature. The strongest proof, however, was in the anatomical structure of the generative circle, composed of masses of blood-vessels, erectile tissue and plexuses of exceedingly sensitive nerves, which were actually erect during the menstrual fluxion, hyperstasis and congestion, as much as were the male generative organs out of the pelvis whenever certain portions of the cerebro-spinal centres were irritated, either from pathological or emotional causes. If erection of the male organs was dependent, as they are, without any doubt, upon neuric stimuli then their anatomical and physiological analogues in the female had to obey the same set of governing principles, as nature does not call upon similar functions in the two sexes to respond to dissimilar causes.

We can trace from the earliest embryological states, from the curving upwards or downwards of the ducts of Müller to the complete development of the fœtus, a most marked analogy of the male and female sexual organs; between

The testicles and ovaries,
" vasa deferentia and fallopian tubes,
" cremasters and round ligaments,
" glans penis and clitoris,
" scrotum and labia-majora,

even to the minutest distribution of follicles and glandular textures, as well as the membranous portion of the male urethra and the vagina. It is too late to continue these analogies any farther, and as he expects to elaborate the subject in another paper* about to be printed, he merely mentions them to illustrate why he is disposed to regard menstruation to be of neuric origin, purely an epiphenomenon attached to a certain period of a woman's life, to indicate that she is prepared to procreate, and at a time after infantile weakness has passed, and before senile decrepitude has commenced.

He should be very glad to hear Dr. Putnam Jacobis' views more elaborately expressed, with regard to her theory of deranged menstruation in the peasant women of France, as from what she states to-night, he could hardly accept her views as a physiological cause, although they may thoroughly explain pathological results.

FROM PHILADELPHIA.

Editor Journal:—Neurological matters have been quite active in Philadelphia for several months, especially in the various discussions concerning

Noise as a Disturber of Health. The relation between noise and disturbances of health, especially of the human system, has received some attention by various authors. It is probable, however, that, neither upon the annals of law or medicine this subject has received such attention as has been elicited by the case of Harrison et al., *vs.* St. Mark's Church, Phil. It will not be possible, in a correspondence, to review strictly every aspect of the case, but rather to look at it from

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* Dr. Seguin's series of American Lectures.